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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/574,691

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Yukio Imaizumi

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT

PAPER NUMBER

1792

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,691	Applicant(s) IMAIZUMI ET AL.	
	Examiner Katherine A. Bareford	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/5/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, lines 2 and 3, line 2 refers to spraying a "metal body", but line 3 refers to "a thermal spray subject" and does not indicate that they are the same.

Claim 1, line 5, "an average area" of each of molten particles is referred to. However, it is unclear what is meant by the "average area"? Is it the total surface area of the entire particle? Is it the area of the particle that is stuck to the surface?

Claim 3, line 2, "line or stick" is a confusing and nonstandard way to refer to thermal spray material? Does applicant mean "wire" as in paragraph [0031] of the specification, for example?

Claims 7-12, applicant does not provide a positive recitation that the referred to "sealing treatment" is performed on the thermal spray coating, and thus is confusing as to what is actually required.

The other dependent claims do not cure the defects of the claims from which they depend.

Claims

3. In claims 4, 5 and 6, line 2, "such as an aluminum-magnesium alloy or a zinc-aluminum alloy" does not further limit the claims, as "such as" is exemplary.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thermal Spraying: Practice, Theory, and Application (hereinafter TS) in view of

Browning (US 4762977), Kang (US 4788077) and EITHER Maros et al (US 3052590) OR Tenkula et al (US 5123152).

TS teaches that it is well known to provide metal thermal spray coatings (aluminum bronze, zinc, aluminum, zinc-aluminum alloys, for example) on metal bodies (iron or steel, for example) for corrosion prevention. Page 53, section 5.7.3. TS further teaches that it is desirable to roughen a surface of a thermal spray subject to achieve an average roughness Ra (AA = Ra) in the range of 2.5 to 13 micrometers, and that the rate of adhesion bond strength improvement decreases above 10 micrometers, indicating a preferred range of 2.5 to 10 micrometers. Page 22. TS describes grit blasting to perform roughening. Page 22.

Claims 4-6: TS teaches that material for corrosion prevention to be thermally sprayed can be aluminum, or an aluminum alloy such as zinc-aluminum. Page 53, section.5.7.3.

Claims 7-12: TS teaches the conventional sealing of these corrosion protection coatings. Page 53, section 5.7.3. TS also teaches that it is well known to seal thermal spray coatings to extend the life of aluminum and zinc corrosion preventive coatings. Page 108, section 8.1.1.

TS teaches all the features of these claims except (1) the use of the grinding tool to achieve the claimed roughness (claim 1), (2) the plasma spraying with a wire to achieve the coating with the claimed average area of molten particles after application (claims 1-3).

However, Browning teaches that a desirable thermal spray application method uses a transferred arc from a plasma torch where a wire or rod of coating material is fed into the arc extending axially beyond the exit. Figure 2 and column 2, lines 60-68. The material to be sprayed can be aluminum, for example. Column 6, lines 1-5. (The Examiner notes that this Browning reference corresponds to Japan 6-39682, note the claim for priority in 6-39682, indicated in applicant's specification as Patent Reference 4).

Kang teaches that in the art of thermal spraying, including plasma spraying, it is well known that when a given coating is to be applied to a given substrate, the skilled worker customarily conducts a series of trials to first determine the process conditions or parameters that optimizes properties in the coating such as adhesion of the coating to the substrate, by varying various process parameters. Column 2, lines 25-45.

Maros teaches that prior to thermal spraying, it is well known to roughen a substrate by grit blasting, grinding or the like. Column 1, lines 55-65.

Tenkula also teaches that prior to thermal spraying, it is well known to roughen a substrate by grinding or grain (grit) blasting. Column 2, lines 50-60.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to (2) modify TS to use the plasma spray method using wire (line, stick) coating material as taught by Browning to apply the thermal spray coating with an expectation of desirable coating results, as TS teaches to use thermal spraying to apply the coatings and Browning teaches a desirable thermal spray coating method. As

Browning corresponds to an apparatus used by applicant to apply coating with particles in the claimed area range (see specification, paragraph [0023]), it is clear that Browning at least provides that the range of area sizes provided by the use of such a plasma spraying apparatus will overlap with that claimed. Note that MPEP 2112.02 indicates that "When the prior art device is the same as a device described in the specification for carrying out the claimed method, it can be assumed the device will inherently perform the claimed process. In re King, 801 F.2d 1324, 231 USPQ 136 (Fed. Cir. 1986)." Furthermore, it would have been obvious to one of ordinary skill in the art to modify TS in view of Browning to perform routine experimentation with the spray coating parameters to optimize coating adhesion, for example, as suggested by Kang, in order to provide the optimum coating conditions, as Kang teaches that this is a well known customary practice in the art, and therefore, the optimization of the spray coating parameters would in turn result in the optimizing of the applied particle area range to a range within the claimed range, as variations in the applied particle area would occur as a result of the parameter adjusting. (1) It further would have been obvious to modify TS in view of Browning and Kang to provide that the roughening is performed by a grinding tool as suggested by EITHER Maros OR Tenkula in order to provide a desirable roughening, because TS provides desirable roughening conditions before thermal spraying, describing grit blasting, and both Maros and Tenkula teach that grinding can be used as well as grit blasting to perform desired pre-thermal spraying roughening. As to the tool, a grinding process would necessarily have to be

provided with a tool to do the described grinding. As to the exact roughness used, TS teaches a range overlapping the claimed range, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

7. The Examiner notes that the reference to Maros et al appears on the PTO-892 as "GEORGE MAROS FRANK; et al".

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1792